BANK OF FINLAND
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A Data Communication Network for Administrative Purposes within the EU

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A data communication network for administrative purposes within the EU

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Abstract

The study assesses data communication requirements within the EU as it concerns Member State officials, EU bodies and the Community. A survey of current projects and their backgrounds is given. In addition the division of responsibilities among various bodies of the Commission are discussed.

Given the EU's need for some sort of integration of data transfer services is self evident, the study investigates what possible challenges lie ahead as EU integration processes continue and its already large communications requirements continue to grow. For example, while the Commission as well as its empowered bodies have recognized the need for a unified communications architecture, the political will to implement such as system has been lacking. The report recommends the creation of a unified, universal communications architecture, that not only can handle all current types of data transfer, but anticipates growth as well.

Key words: The European Union, A Data communication, The Authorities

Tiivistelmä

Tässä julkaisussa paneudutaan Euroopan Unionin sisäiseen tiedonsiirtoon, kattaen jäsenmaiden viranomaisten välisen, jäsenmaiden viranomaisten sekä Euroopan Unionin elinten ja Euroopan yhteisön elinten välisen tiedonsiirtotarpeen. Aihetta käsitellään selvittämällä meneillään olevat hankkeet ja niiden taustoja. Lisäksi selvitetään tiedonsiirron vastuun jakautumista komission eri elimille. Tiedonsiitotarvetta ei paljoa selvitetä, vaan raportin lähtökohtana on, että se on suuri ja että tarve kasvaa, jos Euroopan Unionia aiotaan syventää. Tutkimuksen aikana havaitsin, että komissiossa on oivallettu yhtenäisen tietoliikennearkkitehtuurin tarve ja että päättävät elimetkin ovat sen havainneet, mutta poliittinen tahto sen toteuttamiseen puuttuu. Raportissa suositellaan Euroopan Unionin sisäiseen käyttöön tarkoitetun yhtenäisen, yleiskäyttöisen tietoliikennearkkitehtuurin luomista, jonka avulla voitaisiin hoitaa kaikki nykyiset ja tulevat tiedonsiirtotarpeet.

Avainsanat: Euroopan Unioni, tiedonsiirto, viranomaiset

Contents

Foreword

This report was compiled at the European Institute of Public Administration (EIPA), Maastricht (NL), during the period July, August and September 1995. As this period was quite limited for the purposes of carrying out in-depth research, I have only been able to conduct a basic study in this area in the hope that other investigators will continue the work I have initiated.

Today, the areas of information technology, telecommunications and data communication are extremely important within the EU as they represent key elements for administration and management and are powerful tools (however, only tools) which the EU can put to use in attempting to make its own work more efficient. This could be an interesting area in which to establish a research programme at EIPA.

EIPA was a very pleasant location in which to carry out this study. Its atmosphere was open and helpful and I found EIPA's library to be a good source of information on the EU. Overall, the Institute has provided me with excellent support in my work.

I would, in particular, like to thank Michael Kelly for his assistance - constructive criticism, advice and pointers, which were extremely valuable to me in carrying out my work -, and Yrjö Venna for his kind and patient guidance.

1 Introduction

Today, almost all information is stored in computers. Time series and other historical information and catalogues are all in the form of data bases; before printing, books and papers are in the form of computer files. Actually, today it is very uncommon for any form of information not to be stored as a computer file.

In modern offices, information technology is a key tool. All texts are created using word-processing programs. By way of electronic mail, employees can transfer documents to one another. These documents can be read via a PC and, if necessary, they can be modified and sent back or forwarded. The only point at which information is produced on paper is when it is printed for one reason or another.

The PC makes it easy to merge information from different sources and analyze this information using computer programs. If everyone has access to all the information he/she needs, work is rendered more efficient and is of better quality.

The same automation systems found in the office situation are also present within the organization. This means that even those working in different locations, or even in different countries, can use the same tools as they would have access to within the office situation. However, they do need efficient and reliable data communication to do so.

Data communication is a rather new phenomenon. It has come about as the result of computers needing to interchange data mutually. In former times, data communication was only one aspect of telecommunication. During the last decade, however, it has undergone development and has become an area in its own right. In the future, it may well be that telecommunication will merge with data communication, in which case developments will have come full circle.

Within data communication, the basic function is the transfer of data between nodes, where a node can be a server or a PC. This can be any kind of information: text, images, speech, voice, etc. The common characteristic is that the information is always in a binary-digit form and is transferred between nodes.

Some approximate milestones within this area are:

- about 15 years ago, data communication mainly used dial-up modems at a speed of 1,200 bits/s;
- about ten years ago, high-speed (6-10 Mbit/s) local area networks started to appear within this area;
- about five years ago, high-speed links (> 2Mbit/s) between local area networks started to come onto the market;
- today, new technologies and even higher speeds are being brought into use. Now, very interesting and promising technologies are 100 Mbit/s Ethernet and ATM.[1]

[1]Asynchronous Transfer Mode

New technologies, like the CD-Rom, multimedia, video conference facilities, etc., will change the face of office work extensively. These technologies provide many new possibilities and make work more efficient. But they also demand the willingness of the user. Besides this, they will also require a new kind of infrastructure for computers and data communication.

1.1 Scope of the report

The purpose of this report is to provide an overview of data communication between the Member States and the EU institutions and its aim is to answer the following questions:

- What is the current situation within data communication between the EU institutions and the Member States?
- What future plans do the EU institutions have in this area?
- What is the EU perspective?

To provide answers to these questions, I have collected information from Commission documentation and interviewed specialists from the Commission. In my research, I have concentrated on finding out what is going on within data communication, networking and the sharing of data in electronic form within the EU.

This report will deal with three different aspects:

1. The real situation today. What kinds of data-communication systems are already in use?
2. The perspective provided by EU documentation. What kinds of needs and ideas are there with respect to data-communication systems?
3. A suggestion and perspective offered by the author, based on the two aspects mentioned above, as to what kinds of data-communication structures should be made available.

Aspects 1 and 2 are extremely closely related in that the content of EU documentation at times refers to the real situation and at times only refers to ideas. It is for this reason that, during the investigation, I became aware that it was very difficult to identify which systems are real, i.e. actually being worked on, and which are only ideas.

1.2 Background

The Treaty of Rome sets out the main principle of the four freedoms:
- the free movement of persons;
- the free movement of goods;
- the free movement of services;
- the free movement of capital.

This principle underlies all other aspects of the EU.

As a result of the four freedoms, there is a great need for the interchange of information among the national authorities of the Member States. A good example of this is the case of taxation. If a person moves his/her place of work to another EU Member State, information on this must be transferred from one national tax authority to another to ensure that the taxation applied is fair to this person. Naturally, one main reason for this is also to protect the EU from the misuse of the four freedoms and from criminal infringements rising from this misuse.

Information interchange needs to be efficient to enable authorities to work transparently and rapidly and to avoid non-compliance with the four freedoms resulting from the slow handling of affairs. This is a very important point with respect to the issue of deepening and widening the EU.

The basic hypothesis of this report is that there is a great need for the sharing and transmitting of data between the EU institutions and the authorities of the Member States, on the one hand, and between the authorities of the Member States themselves, on the other hand. However, this report does not analysis this need, it takes it as a given fact.

1.3 The free movement of information

The basic doctrine of the EU is embodied in the principle of the four freedoms. An interesting point is that the free movement of information is not an element of this principle. The reason for this could be that it was either too obvious an aspect or that information covers too wide an area, ranging from advertisements to administrative data.

If the EU wishes to deepen and if cooperation between the Member States is to increase, information flows between the Member States must also increase. Today, the area of administrative information is very problematic. One reason for this is that this field varies very much from country to country as administrative information is not necessarily categorized as a distinct type of information by every Member State. This means that there is no transparency concerning the rules for authorizing the transfer of (administrative) information between Member States.

An example of this is that, in the one country, one kind of information may be open to public scrutiny but, in another country, this may not be the case. The situation can arise in which one country is obliged to include supplementary information in certain forms of information whereas, in another country, it may be illegal to send such supplementary information.

Before deepening and widening, the EU must harmonize certain areas of legislation relating to administrative information and it must create an infrastructure for the interchange of this administrative information.

2 Information flows within the European Union

The EU is very difficult to describe. It is a policy-maker, it governs a free market and it has its own institutions and bodies - the Commission, the Council, the Parliament, the Permanent Representations of the various Member States to the EU, etc. The EU has 15 Member States, each with their own national bodies. These 'EU participants' are located geographically throughout the EU area. Because of this, information flows must also cover this whole area.

When, within the EU, an issue is included in the decision-making process, this starts up an information flow between the participants in the process who must be informed on this issue. This flow is channelled to the participants and, in this way, they receive new information. Subsequently, the information flows back and then to other participants in the process. This continues until a decision has been taken or the issue has been dealt with. After this, the second round of information is released, after which the information is finalized and is once again circulated to all participants.

Currently, almost all the information which is exchanged between the national bodies of Member States and the institutions of the EU is transferred on paper. Due to this, the system is very inefficient and causes a considerable amount of extra work. Much of the work of administrative officers concentrates solely on maintaining this system. The fact that all the information is transferred as a hard copy also creates extra work for those who require the information and for those who are working to ensure that the national bodies of the Member States or the institutions of the EU obtain information rapidly enough.

2.1 The information flow between the EU institutions and the Member States

Even though it is accepted that the most important aim is to achieve the distribution of information throughout the EU within acceptable time-limits, there are many different systems for handling this process. The functioning of this system today is in fact very interesting. Each of the institutions of the EU has its own systems for circulating information, as does each of the Member States. These systems are connected via a 'paper heap'. The EU institutions send a 'paper heap' to each Member State and each individual Member State subsequently circulates this 'paper heap' within its own system. After circulation, the Member State sends the 'paper heap' back to the EU institution in question.

2.1.1 The Example: Finland[1]

If an issue arises within an institution of the EU, the Member States must receive information on this issue. In Finland, the decision-making process is as follows (within the existing time constraints).

1. The EU institution sends all the documentation relating to the issue being decided upon to the Permanent Representation of Finland to the EU in Brussels.
2. The Permanent Representation of Finland to the EU then sends this documentation by air to Helsinki to the EU Secretariat within the Ministry for Foreign Affairs or to the ministry under the responsibility of which the issue falls.
3. The documentation is subsequently circulated in Finland between the responsible ministries, the Finnish parliament, committees and interest groups, etc. At any one time, it is possible for more than 60 different bodies to be involved in this circulation process.
4. During this circulation process, ministries draw up memos setting out Finnish opinions and send them to the EU Secretariat of the Finnish Ministry for Foreign Affairs.
5. The Ministry for Foreign Affairs amasses these memos and compiles the Finnish opinion on the issue in question.
6. The EU Secretariat of the Ministry for Foreign Affairs sends the opinion in the form of a hard-copy document to the Permanent Representation of Finland to the EU in Brussels.

However, if there is not enough time for the above procedure, the whole process must be completed in the form of negotiation by telephone between the Permanent Representation of Finland to the EU and the responsible authorities in Finland.

On a daily basis, the Permanent Representation of Finland to the EU sends some ten kilos of paper to Finland to be included in the process for circulating documentation and formulating the Finnish opinion.

Appendix 4 provides a logical illustration of the way in which information is circulated in the case of Finland.

3 Data-communication systems within the EU

Today, the only usual method for transferring information (data) within the EU is on paper. Although there are some systems which use electronic data interchange, if it is necessary to communicate with other systems, the only option is again the use of paper.

The EU has built up a whole infrastructure for the sole purpose of disseminating papers throughout the European Union area. This is however costly, slow and generates a great deal of work. In this respect, using paper as a data-transfer mechanism produces, in many ways, a real bottleneck

Nevertheless, there are some data-communication systems in use for the purposes of transferring information within the EU and between the Member States. However, such systems are always constructed for one specific need and there has never been a common strategy. Currently, a substantial number of IT[2] projects are being carried out for various purposes, and these require the possibility of interchanging information between participants in different Member States. This means that the need to build up a network between participants has also been recognized.

3.1 The European Commission

Each of the Commission's Directorates-General (DGs) and its Secretariat-General have their own local area network (LAN).[2] These networks are connected, so that all services are available to all nodes. All networks use the TCP/IP[3] protocol family and, in principle, this system can be seen as one large 'CommissionNet'. Due to the fact that there is TCP/IP protocol, such a 'CommissionNet' could make connections with any other network which uses TCP/IP as a protocol.

'CommissionNet' has several gateway services. These gateways provide access to a public X.400 network, a public X.25 network and a public telex network. Therefore, it is possible for any other network possessing some of the same communication services to connect with 'CommissionNet'.

The Commission has decentralized its data-processing functions to the DGs and to the Secretariat-General. Each Directorate-General (DG) has its own data-processing experts and systems and its own local area network. These are the basic elements of data communication within the Commission. The LANs of the DGs are connected so that it is possible to interchange information between DGs.

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[2] Information Technology

[3] In this report, TCP/IP always refers to the protocol family.

3.2 The European Parliament

The European Parliament (EP) has a local area network in each of its locations and these are connected via high-speed links. The EP has its own data-processing specialists responsible for maintaining systems and designing and developing new ones to meet its future needs.

3.3 The Council of the European Union

The Council has a local area network and its own data-processing systems. It also has its own experts, who are responsible for designing and developing new systems in line with changing needs and to keep systems functioning.

3.4 Data links between the EU institutions

The main EU institutions, the European Parliament, the Council and the Commission, do have several data links; there is one connection between the EP and the Commission and one between the Council and the Commission.

The first of these connections, between the EP and the Commission, is used for sending EP proposals and queries, etc., to the Commission. This connection functions such that the EP has a 'typing team' responsible for writing the documents to a database which is replicated to the Commission at the other end of the line. The Commission then examines the documents and circulates them to the relevant persons. The system is therefore a semi-automatic dedicated system.

The second connection, between the Council and the Commission, is used for sending legislative documents, proposals and comments, etc., back and forth between the Commission and the Council. The Commission firstly checks and corrects the documents manually and then sends them via the line to the Council, where a 'typing team' checks them and ensures their circulation within the Council.

There is also a system for connecting the Member States and the Commission, which is used for interchanging standardization documents (proposals, comments to proposals, etc.) between Member States and the Commission. In order to access this system, nine of the Member States use X.400 and the remaining ones use telex. The system itself functions as follows. The Member State sends documentation to the Commission, which has it translated into all the relevant languages and sends copies to all the Member States. The Member States send back their comments and, once again, the Commission has these translated and sends them to all the other Member States. The procedure continues in this manner until the standard has been approved.

4 Trans–European networks

Trans-European Networks is an umbrella covering many kinds of technical infrastructures, from railways to satellite communication.

4.1 The Maastricht treaty

Title XII of the Maastricht Treaty[3] refers to the issue of trans-European networks. As is always the case in this kind of treaty, what is mentioned is very global. The Treaty states that:

- '...the Community shall contribute to the establishment and development of trans-European networks in the areas of transport, telecommunications and energy infrastructures'.[4]

and:

- '...the Community shall aim at promoting the interconnection and interoperability of national networks as well as access to such networks...'[5]

In order to achieve this, the Community:

- will establish a series of guidelines;
- will implement measures to ensure the interoperability of the networks, particularly in the area of technical standardization;
- may support projects in this area.

The basic idea behind trans-European networks is to harmonize the areas mentioned above and, in this way, assist in the construction of a framework for a system of open and competitive markets.

4.2 The White Paper

The European Commission has set out guidelines for the development of trans-European networks in Chapter 3 of its White Paper[4] on this subject. The basic notion is that Europe needs a good and homogeneous infrastructure in the areas of transport, energy transport and telecommunications, as this would break down the barriers obstructing the achievement of the four freedoms. This notion is also important because the creation of such infrastructures would increase Europe's competitiveness.

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[4]Article 129b(1)

[5]Article 129b(2)

One problem associated with this project is that European countries have very limited possibilities for investing in infrastructures beyond investment which is already planned. This means that the extra financing required must somehow come from the private sector. In some cases, this could be difficult as the amount of financing needed is quite considerable.

The Commission has carried out an analysis on the state of progress of trans-European networks and has concluded from this analysis that the establishment or completion of the various networks and projects is progressing too slowly. While the White Paper on the subject does not give an in-depth analysis of the reasons for this, one problem could be that the whole area is too wide.

The White Paper discusses all three networks and also gives lists indicating the projects falling under the Trans-European Networks umbrella. These lists include the transport network, electricity networks and gas networks. However, it is interesting to note that no list is given for telecommunications projects.

4.2.1 A transport infrastructure

In principle, this is the least complicated sub-area of trans-European networks as it concerns tangible work on building the infrastructure of roads, canals, railways, etc., which are relatively uncomplicated technologies. Consequently, international projects in this area are quite easy to manage. Nevertheless, the one problem prevailing in this field is that it is very difficult to attract private investment.

The Commission has calculated that, before 1999, direct investments in this area should amount to ECU 220 billion. In its White Paper, the Commission has already listed 26 major transport infrastructure projects,[6] the overall investment figure of which is about ECU 82 billion.

4.2.2 An energy-transport infrastructure

The building of an energy-transport infrastructure is an area which is more problematic than that of transport. However, it is still comprehensible and manageable. Each project within this area can be seen as having its own system and the need for such a system easily identifiable. In addition, it is not difficult to calculate whether the project is worth doing from the financial point of view. However, one problem is that, generally, this area is not very easy to privatize.

Based on projects which are in progress or which have been scheduled or planned, the Commission has estimated that, by the end of the decade, total investment in this area could amount to ECU 13 billion. In the White Paper, the Commission listed 37 electricity-network projects and 29 gas-network projects.[7]

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[6] White Paper, pp. 82-83.

[7] White Paper, pp. 84-85.

4.2.3 Trans-European telecommunications networks

This area seems to be the most difficult for the Commission to deal with. With respect to the other areas set out in the White Paper, the Commission has mentioned the issue of infrastructure but only in terms of networks.

Chapter 3.6 of the White Paper,[8] 'Telecommunications Networks: Creation of New Markets', provides a vision for trans-European telecommunications networks. This area has been seen as important for the completion of the Single Market. The contribution of telecommunications will be the creation of the 'common information area'. This is in fact an interesting point as it is also stated that, before the completion of the Single Market, there should be a possibility for the free movement of information within the EU.

There are also very practical grounds in favour of the EU dealing with this sector. Telecommunications is a rapidly growing industry which will create new services and jobs. In its White Paper,[9] the Commission estimates that, up to the year 2000, annual growth in this area will be 8% for services and 4% for the equipment market. Therefore, by the year 2000, this area will represent 6% of total GDP.

The Commission sees telecommunications networks as representing the nervous system of the economy and of tomorrow's society; this is the result of the digitalization and electronic processing of information. New technologies, such as multimedia services and ATM, are beginning to play a key role in the Commission's vision.

It is clear that the Commission does not offer the Member States a very specific programme to follow within this field. This could be because the area itself is problematic and not fully standardized. Another reason might be that advisers to the European Commission are unable to agree on the direction to take in this respect.

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[8] White Paper, p. 79.

[9] White Paper, p. 80.

5 The ENS programme – the European nervous system

ENS is an umbrella programme covering many projects under the Commission's DG XIII. It is a mechanism for coordinating projects. Although no political decision has been taken with respect to ENS, DG XIII has launched a project and published documents: STEPS,[5] ENS-CD,[6] video[7] and the ENS final report,[8] on all of which the analysis set out in this report is mainly based.

The ENS programme forms part of the trans-European network. In this respect, the introduction to the STEPS document states that: 'The Council adopted in 1991 a specific Community Programme of Research and Technological Development in the field of Telematics Systems of General Interest that includes as area 1: Support for the establishment of trans-European networks in administrations.' This forms the basis for creating the ENS programme.[10]

The need for the ENS programme is based on the idea of creating a 'Virtual European Administrative Service.' This would means that individuals can access the same information and services from administrators throughout Europe in those areas falling under the competence of their particular service. The ENS programme represents the infrastructure for 'Virtual European Administrative Services'.[11]

The initial aim of ENS was to construct a network serving the European Union, a network which would cover all the Member States and the EU institutions and would act as the nervous system of Europe. However, within a very short period of time, the ENS working group discovered that this would be an impossible goal. The main reasons for this are the differences between individual Member States with respect to the cost of data communication, the situation within the respective telecommunications markets and the varying degrees of standardization achieved, etc.

For this reason, it was decided that it would be advisable to take a more pragmatic approach to ENS and to change its goal; support was provided to special projects, which were then included under the ENS umbrella. Today there are 23 such projects. Approximately ten of these have a data-communication network. Every project is run independently and solutions to any difficulties encountered are found on an individual basis. So, in fact, the ENS programme is nothing more than a means of gathering information on projects within ENS documentation.

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[10] STEPS, p. 1-I.

[11] STEPS, p. 1-II.

5.1 Projects under the ENS umbrella

Many projects have been adopted under the ENS umbrella. The notion behind the idea has been that projects which were advantageous enough from the ENS point of view would receive financing from DG XIII and the DG would then include this project under the ENS umbrella. Below is a short list of the projects falling under the ENS umbrella taken from the STEPS handbook.

5.1.1 ENS A-projects

1. EBR: European Business Register
   aim: to create a European Company Register and to create a network between administrations holding official company information;

2. EWTIS: European Water Traffic Information System
   aim: to create an information system for ships carrying dangerous cargo;

3. INCA: Information Net and Card for the Adapted Management of European Road Transport and Traffic
   aim: to construct an architecture for the interchange of transport information between administrations;

4. CAPE: Computer Aided Post in Europe
   aim: to create a pan-European information system for postal service organizations for the purposes of improving Community postal services;

5. CARE: CARE Telematics
   aim: to demonstrate how telecommunication can improve the efficiency and effectiveness of national administrations in the field of health care;

6. TECH: Transplant Euro Computer Network
   aim: to construct a European-wide, open information system for organ-exchange organizations, registers and tissue banks;

7. SOSENET: Social Security Network
   aim: to create a network for the interchange of information on old-age pensions between social security organizations;

8. ENVIRONET: Environment Network
   aim: to establish a technical platform for the exchange of information between European environmental administrations;

9. NORT: Income Tax Management for Non-Resident Taxpayers
   aim: to create an information-exchange system between tax authorities to avoid double taxation;

10. EIP: European Interconnectivity Platform
    aim: to create a European-wide enhanced communication service and a communication platform;

11. CERT CENTRE: Certification Centre
    aim: to provide conformity testing and certification within the ENS programme;

12. RISE: Retrieval and Interchange of Standards in Europe
    aim: to speed up the standardization process and to render it more efficient, using telematic information exchange;

13. SAPiENS: Support for Application Pilots in ENS
    aim: to make a contribution to the ENS programme;

14. MENSA: Measures for ENS Administrations Services
    aim: to publish the results of ENS.

5.1.2 ENS B-projects

1. UCAMS: User Cost Benefit and Meeting Support
   aim: to provide services such as communication mechanisms for the ENS programme itself

2. DECON: Demonstration Centre and National Conferences
   aim: to create a demonstration centre and to promote national conferences;

3. VIFRA-A and VIFRA-B: Validation of ENS Infrastructures
   aim: to evaluate the infrastructure convergence within the ENS programme;

4. SANDRE-A and SANDRE-B: Standards and Registers
   aim: to provide information on standards and conformant products to assist a convergent infrastructure definition among the ENS projects;

5. HATRA: Handbook Maintenance and Translation
   aim: to update the STEPS handbook and translate it into other official languages;

6. CIFRE: Common Infrastructure Requirements
   aim: to define a common infrastructure requirement;

7. LEGSEC: Legal and Security
   aim: to provide a general framework for legal and security issues based on experience gained from the ENS projects;

8. MUMED: Multi-Media
   aim: to investigate the technology of multimedia as a contribution mechanism;

9. Multi-Media Studies: UK, German, French and Italian
   aim: four different studies on multimedia technology.

All the ENS projects are in some way pilot and development projects and when the ENS programme comes to an end, there will be no further support framework for their continuation. More details on these projects can be found in the STEPS handbook, ENS cd-rom and the ENS final report.

5.2 The ENS EIP project

One project falling under ENS which is of particular interest is EIP - European Interconnectivity Platform. The goals set for the project have been very ambitious, i.e. the development of an enhanced communication service forming the platform for all other ENS projects.

EIP has divided its work into three main areas:

1. European Bearer Services: this focuses on the public value-added network for the management of customer-oriented services;
2. European Telematic Network: this provides a universal, versatile and intelligent user-access network architecture allowing any type of user access to telematic service centres;
3. European Messaging Network: this is for the establishment of an international backbone for MHS-EDI[12] applications.

This project has now run its course and the results are in pilot use. These results are in short:

1. Choice of protocols:
   X.25, X.28, X.29, X.400, VT100 (tty); and videotex
2. Choice of message system:
   EDIFACT
3. Administration:
   The project team discovered that all objects in the network must work together at 100% efficiency, otherwise interoperability is not guaranteed.

In actual fact, the results achieved by the EIP project are rather obvious and not very innovative. One drawback with respect to these results is that there is no standard for high-speed data communication and the only high-level data communication standard is X.400.

[12] Message Handling System - Electronic Data Interchange.

5.3 ENS today

Although some projects are still ongoing and some documentary work is still to be carried out, the ENS programme as such has, in practical terms, now come to an end.[9] However, officially, the programme will not be completed until the end of this year (1995). The reason for ENS coming to an end is that it was only intended to be a research and development programme creating purely pilot projects in order to demonstrate that systems can work together, and the programme has not implemented anything permanent, as any further development would fall under the responsibility of other bodies.

ENS represented DG XIII's Framework 3. The next framework, Framework 4, has now been started up and will continue the work commenced within the ENS programme.

Framework 4 will concentrate on the information flows between administrations with the aim of finding the best solutions for data communication between administrations. This Framework will consist of mainly vertical projects, that is to say projects which are aimed at one specific need, i.e. the ENS TECH project. Framework 4 will support projects by providing financing and by attempting to standardize systems as much as possible.

6 The IDA programme – interchange of data between administrations

The IDA programme[10] is a programme which falls under DG III. It has as yet not been adopted by the Council, although the Council has received a proposal on the matter and has started processing it.

Like ENS, the IDA programme is an umbrella programme, and its aim is to contribute to the implementation of trans-European telematic networks for the exchange of data between administrations. The IDA programme adopts projects considered to be feasible and then tries to give them a common orientation. A necessary tool is of course financing.

The IDA programme is therefore more pragmatic than ENS and it has a clear target, which is to create a system for data interchange between administrations. The IDA umbrella also covers many projects, which are likewise all aimed at assisting in the interchange of data between administrations.

6.1 Some projects under the IDA umbrella

It is difficult to identify which projects fall under which umbrella and it also seems to be the case that projects move from one umbrella to the other. The following list gives those projects which have been adopted under the IDA umbrella. The list is based on information obtained from IDA 'On-Line',[11] the IDA Budget Allocation 1995[12] and a proposal for a Council Decision.[13]

Infrastructure projects:

1. Electronic Messaging Between Administrations
   aim: to increase the use of E-mail, the goal being 'harmonized and fully interoperable E-mail services for all European institutions and Member State Administrations involved in the management of the Internal Market';[13]

2. IDA - Communication and Management of Official Documents
   aim: to increase the efficiency of the decision-making process and, in particular, legislative and budgetary procedures;

3. NSPP-5MS: The National Servers Pilot Project 5 Member States
   aim: to create an X.400-based store-and-forward network between five Member States and some EU institutions;

[13] IDA 'OnLine', p. 4.

4. NSPP-12MS: The National Servers Pilot Project 12 Member States
aim: as above, but involves 12 of the Member States;

5. IDA - Horizontal Activities - Generic Services
aim: to develop common facilities and tools for networks which will function jointly and connect with one another using Common Communication Network/Common System Interface CCN/CSI;

6. IDA - Horizontal Activities - Architecture
aim: to maintain and develop the technical specifications to ensure interoperability and expand NSPP to other areas and all Member States;

7. IDA - Horizontal Activities - Legal and Contractual Aspects
aim: to define and agree upon legal aspects and make participants and users aware of these aspects.

Projects dealing with agencies:

8. EIONET: Environmental Information and Observation Network
aim: to create a data-communication network between the European Environment Agency and its clients;

9. EMCDDA: European Monitoring Centre on Drugs and Drug Addition
aim: to create a permanent structure for monitoring the use of drugs and for sharing information on the socio-cultural and epidemiological aspects of drugs;

10. European Medicine Evaluation Agency Network
aim: to create a data-communication network between the European Medicines Evaluation Agency and its clients;

11. RESMA: *Réseau des Marques*
aim: to create a data-communication network within the Internal Market between the Office for Harmonization and its clients;

12. Translation Centre for the Bodies of the European Union
aim: to enable the rapid and reliable interchange of electronic documents between the translation centre and its clients.

Projects dealing with customs and excise:

13. VIES: VAT Information Exchange System
aim: to exchange VAT information;

14. Excise Control
aim: to convert the current SEED[14] database into an on-line distributed database and convert the fax-based movement verification system into an on-line messaging system;

15. QUOTA
aim: to create the centralized management of the tariff quota system and connect the Member States electronically for this purpose;

16. SCENT-CIS/FISCAL
aim: to create a system and network for combatting fraud within the areas of customs, agriculture and fiscal matters;

17. TARIC: *Tarif Intégré Communautaire*
aim: to enable the centralized collection of regulations/measures relating to Community imports and exports and the electronic exchange of information between participants;

18. EBTI: European Binding Tariff Information
aim: to develop a data-transmission system for binding tariff information;

19. TRANSIT: Transit Control System
aim: to automatize the customs clearance procedure for goods circulating within the EU and EFTA countries.

Project dealing with fisheries:

20. FIDES: Fisheries Data Entry System
aim: to create an information-exchange system between DG XIV and fisheries administrations within the Member States.

Projects dealing with agriculture:

21. ANIMO: Animal Movements
aim: to provide an electronic notification system between veterinary control posts;

22. PHYSAN: Phytosanitary Controls
aim: to improve the efficiency of information exchange within the field of plant health between the Member States and the Commission;

23. SHIFT: System to Assist the Health Controls of Imports of Items at Frontier Inspection Posts from Third Countries
aim: the exchange of information between veterinary-control authorities of the Member States.

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[14] System for the Exchange of Excise Data

Projects dealing with social security:

24. EURES: European Employment Services
aim: to create an information system and network between the Community and the national Public Employment Services;

25. TESS/SOSENET: Telematics for Social Security / Social Security Network
aim: to create an information-exchange system between all social-security institutions in the Member States.

Project dealing with public procurement:

26. SIMAP: *Système d'Information sur les Marchés Publics*
aim: to increase efficiency in the handling of public tenders.

Projects dealing with health services:

27. CARE: Early Warning System
aim: to continue the ENS CARE project and to achieve full implementation;

28. REITOX: *Réseau Européen d'Informations sur les Toxicomanies*
aim: to create a data-communication network between the Commission, national authorities dealing with drugs and the European Monitoring Centre on Drugs and Drugs Addition.

Projects dealing with statistics:

29. DSIS: Distributed Statistical Information Services
aim: to coordinate the development of the European statistical services;

30. EXTRACOM
aim: to develop foreign-trade statistics;

31. SERT: *Statistiques d'Entreprises et Réseaux Télématiques*
aim: to provide automated techniques for statistical data collection and dissemination.

Project dealing with commercial policy:

32. SIGL: *Système Intégré de Gestion de Licences*
aim: to manage licences for imports of restricted products from third countries.

Project dealing with competition policy:

33. Fourcom and Comsteel
aim: to provide an information-exchange system between the Commission services and the national competition administrations.

Project dealing with culture:

34. ITCG: Illegal Traffic of Cultural Goods
aim: to prevent the illegal traffic of cultural goods.

The list of projects is organized such that the first two categories, infrastructure projects and projects dealing with agencies, are general and horizontal. These projects are not mentioned in the Draft Council Decision even though DG III has placed them under the IDA programme. The reason for this might be that the Council did not wish to take a decision on the infrastructural project or on those projects dealing with agencies. The remaining projects are organized according to area and they are all included in the Draft Decision.

The purpose of almost all the projects is to share data within the EU, and between the Member States and the EU institutions. Many of the projects are already in use in some form. The communication needs of these projects are very similar but the participants vary, which means that, to some extent, everyone is carrying out the same work.

6.2 IDA and DG III

At first sight it seems to be somewhat inappropriate for DG III to be responsible for the IDA programme as, officially, this DG is in charge of industry and IDA is concerned with EU internal matters. IDA's target is to create a common architecture for trans-European public administration networks[14] and this does not fall particularly within the field of DG III responsibilities. It is only the fact that one of DG III's fields is standardization that establishes a link with IDA.

IDA was launched by DG XIII[15] and was then moved to DG III. There were several reasons behind this, but the most likely reasons are:

- the unit (staff members) moved from DG XIII to DG III and IDA followed;
- the main expertise in this area is within DG III, which serves other DGs via IDA;
- it was decided that the ENS and the IDA programmes should be separated and placed under different DGs.

Whatever the reasons may be, IDA originated in DG XIII and was then moved to DG III, which does provide an answer to the question of why IDA currently falls under this DG. DG III and DG XIII both fall under the same Commissioner and therefore have the same mandate. If there was indeed good reason to separate ENS and IDA and place them under different DGs, the solution makes sense because it was, politically, an easy decision.

6.3 IDA today

Today, IDA falls under DG III and attempts have been made to obtain a Council Decision on the programme. The Commission has in fact adopted IDA and a consensus has been reached as to the programme's content. In addition, both the EP - in principle - and the Council have accepted IDA. So, where does the problem lie? The problem lies in the fact that the Council and the EP have different opinions on how the decision on IDA should be taken and they are unable to resolve this.[15] In the meantime, no political decision has been taken on this subject.

In practice, there is a pre-IDA programme under which projects are in fact already being carried out. The pre-IDA programme will continue until the decision on IDA has been taken, so the issue of IDA remains unresolved. If the decision-making process in this respect continues to be delayed, it could be that the IDA programme will have been completed before there is a political decision on the matter.

[15] Discussion between DeVillers, De Keyser and Sipila.

7 The relationship between ENS and IDA

ENS was intended as a programme for research and development and was started up in 1991 by DG XIII. It was a very ambitious programme, aiming to construct a data-communication infrastructure. Its name, ENS - European Nervous System -, was taken from the White Paper, which states: 'These (modern telecommunications) networks will therefore constitute the nervous system of the economy, and more generally of tomorrow's society.'[16]

During the ENS programme, DG XIII discovered that the targets set were not feasible; however, the reason for this was not clear, although it is very likely that there was more than one reason behind this. DG XIII worked around the problem by changing the targets a little and by switching support to single-purpose projects.

In 1992, an idea was put forward within DG XIII by a certain group concerning a network between administrations. It could be that this group did not actually abandon the original target or that they wanted to split the administrative aspects up into different programmes. Soon afterwards, IDA was moved to DG III and a Commission proposal was drawn up on the subject. This is the great difference between IDA and ENS.

IDA contains some of the projects which were in ENS. IDA can therefore be seen as an implementation project for ENS. However, this is only partly true. While ENS was a research and development programme, it did contain some implementation projects like TECN. IDA is a more pragmatic programme and its purpose is to implement systems. If one looks more closely, however, one can see that it also covers research and development projects like: Communication and management of official documents. As both programmes have adopted projects which already existed, it is not very easy to identify the real relationship between ENS and IDA.

The ENS documentation which I researched did not make any mention of IDA. A reason for this might be that ENS documentation was published before IDA came into existence. However, it could also have been a coincidence that the documentation selected did not contain such references. In addition, IDA documentation did not mention ENS to a great extent, which is surprising considering that IDA is an implementation project for ENS.

ENS will continue under DG XIII as Framework 4 and will be more practical, concentrating on the interchange of information between administrations,[17] although, in other ways, it will be quite similar to IDA. Of course, IDA is an implementation programme and Framework 4 will be a research and development programme, so there is in fact a difference. However, it is rather illogical for an implementation programme to start before the research and development which it is implementing.

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[16] White Paper, p. 80.

[17] Discussion between Moseley and Sipila.

8 Data-communication standardization and the EU

Over the years, the Commission has published various papers, reports and decisions on standardization within the field of telecommunications. On the whole, these have been very general.

The Council has taken a decision on standardization within the field of information technology and telecommunication.[16] In this decision, the Council has:

- specified a terminology;
- stated that the EU should adopt those standards which are available in this area and, where no standard is available, a new own standard should be created;
- stated that the Member States will take the necessary steps to ensure that a telecommunications network is constructed in the Member States in accordance with the standards;
- placed an obligation on the Commission to submit, every two years, a progress report to the European Parliament and the Council on the standardization activities in the information technology sector.

The basic idea here is good in that it advocates following the market and using the work already done by others as much as possible. However, the main problem concerns making a choice with respect to the standards which are available. The risk is that standardization work is so slow and that there are so many delays that the standard will already be outdated by the time it is chosen. Another risk is that the EU will try to use standardization as a tool for protecting its own industry.

The Commission has published three reports on this subject. The first one was published in 1991[17] and the main items which it covered were:[18]

- the legal basis for standardization activities;
- the importance of standardization for completing the Single Market;
- the structures and procedures for European standardization;
- the results achieved over the years 1988 and 1989.

The second report was published in 1992[18] and the main items it dealt with were:[19]

- the extension of the fields covered by standardization activities;
- the development of tools for speeding up and improving functioning;
- the practical application of the projects launched previously;
- the promotion of Commission standards.

The third report[19] was published this year and the main items it treats are:[20]

- the extension of the technical fields covered;
- the introduction of tools and procedures aimed at more rapid and more effective standardization;

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[18] SEC(92) 1598 Final p. 3.

[19] COM(95) 39 Final p. 3.

[20] COM(95) 39 Final p. 9.

- the launch of projects for the effective application of the standards in Member States;
- information activities.

8.1 ISDN

Integrated Services Digital Network - ISDN - is or was a magic word for solving almost any problem whatsoever within the area of telecommunications. The Commission has stated[20] that, since 1984, ISDN has been a key element of the Community's telecommunications policy and that it will be the modern harmonized infrastructure on the basis of which other services can work. ISDN will constitute a veritable revolution in the area of telephone use. New services can be made available and a European telephone network will work as one large homogeneous network.

ISDN is to be brought into use in all Member States and will constitute a basic service for all telephone users. Although the time scale has not yet been determined, it seems that it will be possible to have ISDN telephones in almost all Member States before the end of 1996. Of course, the question of whether the user actually needs an ISDN telephone is a completely different matter. One could also ask: is there any demand for such a digital telephone? Will users be prepared to pay the cost of such a telephone? These are difficult questions to answer but, if users only use a telephone as a telephone, it is very probable that they will not be particularly interested in ISDN.

Technically speaking, ISDN is a very important step forward in the telephone services area. It is the most significant development in the design of the normal telephone since the telephone was invented over a hundred years ago.

A telephone network has never been a very good device for data transmission. ISDN is much better and faster than the PSTN (Public Switched Telephone Network), but it does not constitute a solution for all data-communication needs. ISDN will be efficient in the same area in which PSTN is used today - mainly in slow traditional transmissions which are only needed from time to time.

There are two main problems associated with ISDN and these both have the same origin - slow speeds.

1. The first problem is that developments within the area of information technology are very rapid. Because of this, it is impossible to identify the kinds of needs there will be for data communication in the future. However, it is my view that the need for increased data-communication capacity will be accelerated in the future.
2. The second problem is that ISDN is already too slow to be used for interconnecting local area networks.

8.2 X.25 and X.400

X.25 is a good and reliable data-network service and is available throughout the EU Member States. X.25 is a standard packet switched network. This means that data is transmitted over the whole network as packets and that connections are switched between end nodes.

On using the X.25 standard, the user's interface is actually standardized; X.25 guarantees that all data are transmitted from one end node to another and that there are no errors in data.

One problem with X.25 is that it is slow and rather expensive when transmitting much of the data. The cost of using X.25 depends on both the usage time and on the amount of data sent through the network. X.25 is a very good service for terminal use and for connectionless data-communication needs because it is reliable and the slow speed does not cause any problems.

X.400 is a standard for message services. It is a connectionless store-and-forward based system and is often run over the top of the X.25. Usage costs for X.400 depend mainly on the amount of data transferred. This means that normal messages are cheap, but that it is expensive to transmit large files and documents through the X.400 network.

Because X.400 is a good and functional standard and is available in most EU Member States, it is also used for other purposes than electronic mail. It is widely used for file transfer and program-to-program communication is also possible.

8.3 Frame Relay and ATM

Frame Relay is a standard for a high-speed transmission network for data communication. It is possible to connect it to local area networks so that, from the user's point of view, it is like using one single network. This means that, providing access is authorized, all the data and software throughout the network is made available to the user.

Frame Relay is a packet switching network. It works well with data but is not the best choice for voice and moving images. The Frame Relay service is available in all Member States.[21]

ATM is a standard for a high-speed transmission network. It can be used for transmitting all kinds of information. Via the ATM network, it is possible to transmit video, speech and data simultaneously. ATM allows the data-communication network and the telecommunications network to be merged into one single communication network.

ATM is a new standard which will be brought into use within a couple of years. Today, however, it is too expensive for normal use. The reason for this is that the equipment required is very expensive. However, the situation will change when more vendors appear on the market. At the moment, ATM seems to be the right choice for a network infrastructure if one is designing a new wide-area network,

something which will be brought into use within a couple of years. Of course, there is always the risk that prices will not fall, but this is not very likely.

8.4 TCP/IP

The TCP/IP protocol family is a group of high-level protocols. This family includes, for example: a file-transfer protocol FTP, an on-line terminal session protocol TELNET and an electronic-mail protocol SMTP. TCP/IP has been very successful within the area of data communication. It is widely used and TCP/IP products are compatible with each other even though they come from different vendors.

TCP/IP can be used over the top of almost any kind of telecommunication or data-communication infrastructure. In this sense, it is ideal for data communication.

9 Networking, automated data processing and information technology within the EU

The EU has 15 Member States, several institutions and many other bodies. All these components function independently of one another and they have their own information technologies and policies serving their own individual purposes. It is realistic to take as a point of departure and as a given fact that these components are different and that it would be impossible to rebuild all their systems.

However, even though the systems are different, the work which has to be done using computers is similar. This is due to the fact that information technology is used for the purposes and needs of administrations and these purposes and needs are quite similar among the various national administrations of the EU.

9.1 The Internet revolution

Internet was originally created as a network for universities. However, shortly afterwards other institutions also started using it. It was and still is easy to access the network via Internet because it uses the TCP/IP protocol family.

Internet originated in the USA, and is the widest network in the world. It is based on the TCP/IP protocol family and any user can access the network at cheap rates, which means that today Internet is *The Network*. Internet is currently available worldwide and its user base continues to increase very rapidly, making it the largest information source in the world.

Internet has already changed the face of information technology and the use of information technology, and it will bring about further changes in the future. It will create new innovations and standards, etc., and will represent the most significant change in information technology since the computer was invented.

However, Internet does have its limitations and risks. The main problems are security, management, maintenance and traffic jams. Internet is a good medium for sharing information and for electronic mail, but today it is not the right choice for companies or the internal networks of institutions.

9.2 Security

The EU has become aware of the fact that there is a security problem within the area of information technology. In this context, the Commission recently put forward a proposal for a Council recommendation on common information technology security evaluation criteria.[22] The Council adopted this proposal with only minor amendments on 7 April 1995.[23]

For the use of information technology and networks, security is one of the key issues. Within both information technology and data communication, the issue of security has the same status as it would have within normal information exchange:

- the information must be correct. It must not be possible for information to be changed by unauthorised persons;
- the information may not be accessed or used by anyone other than the person(s) who are authorized to access and use it;
- it must not be possible for information to be stored by anyone other than the person(s) who are authorized to do so.

Data communication also demands authentication, which means that all the communication participants must be sure that the partner at the other end is really the partner they believe him/her to be.

Useability and share systems are also issues falling under the area of security. When systems are created today, security must be the one basic point of departure for their design, and this consideration is becoming increasingly important because systems are becoming more and more open.

9.3 Language problems

The number of different languages used within the European Union is a considerable problem. It causes a great deal of extra work and is a real challenge for management systems and, of course, for IT systems. The fact that various languages are used causes a considerable amount of information to be circulated throughout the whole system because, all the time, new ideas and proposals are being put down on paper and in documents and all this must be translated into all the EU languages. For this reason, documents must always be circulated via translation services.

A very good example of this is the circulation of proposed standards. If one Member State proposes a new standard, this has to be translated into all the relevant languages to enable all the Member States to provide comments on the original proposal. Again, these comments must be translated into all the relevant languages. This process continues until the proposal has been either accepted or rejected.

It is therefore not an easy task to construct an IT system aimed at supporting the circulation of information, and to then automatize it to use all the European languages. Such a system will face many difficult problems at a very basic level such as the fact that:

- the character sets are different for almost all languages;
- it may be difficult to agree on a data mode.

However, these problems can be solved.

In my opinion, information technology and data communication are the only tools which are capable of finding a solution to the EU's language problem.

9.4 IT strategy

Information technology within the EU is decentralized. Naturally, each Member State has its own methods for using information technology and its own IT strategy. The Council, the European Parliament and the Commission also have their own IT systems and strategies (if they have a strategy at all that is). Within the Commission, the DGs and the Secretariat-General also each have their own IT systems and strategies and, today, it is quite obvious that having a common IT strategy for the EU as a whole is an almost impossible idea. It would even be difficult for the EU institutions to create a common IT strategy.

Although it has been accepted that the EU institutions should indeed have such a common strategy, a decision has not been reached as to which particular institution will be responsible for this. While this remains the case, creating such a strategy will be problematic. Consequently, the EU does not yet have a common IT strategy. The only step in this direction was the Bangemann report[24] but, as a strategy paper, it is too general and it has not gained the official status of a strategy paper.

10 Summary and conclusions

The EU is a body which feeds on information and which produces colossal amounts of information. This information can be in the form of a decision or a report, etc., and if the EU participants wish to develop the Union, the main tool for this should be information technology. The EU must concentrate on managing information and information flows.

Because information plays a major role within the EU, it is also a key element for enabling participants to influence the EU's policies or decision-making process. In practice, one can say that those participants who obtain information the most rapidly are the participants who are in the best position to influence decisions.

10.1 The situation today

Information technology and data-communication networks are the basic elements of modern society. The revolutionary machinery capable of bringing about the transition from modern society to an information society is the communication network. The Community has produced documentation on this transition, but it does not have a strategy for its realization within the context of the EU itself because there is no strategy for an internal communication network within the EU.

Electronic data communication between the EU institutions and the Member States is a new concept and no common network is available. However, the need for the network has been identified and some ideas have been put forward on a common data communication network between Member States and the EU institutions. Two programmes, ENS and IDA, are currently working on this area. Both programmes are run by the Commission, ENS by DG XIII and IDA by DG III. These programmes fall under the umbrella of the trans-European networks.

However, both programmes have experienced the same problem on trying to create a common data-communication network within the EU. The problem is that the area of data communication comes under neither DG III's nor DG XIII's mandate. In actual fact, it seems that this area does not come under the mandate of any one body within the EU.

From the point of view of information technology, the EU forms a group of autonomous participants, each with their own independent information technology and this is very inconvenient for formulating a common strategy within the field of information technology.

10.2 Conclusion

Currently, the EU has no common data-processing or communication architecture. No internal strategy for a network or for common EU information technology can be identified. It seems to be the case that no one within the EU is responding to the issue of data processing for the EU as a whole.

In my opinion, the EU institutions should create a centralized body for internal data processing and communication which would respond to the whole system and start to develop common information technology for the EU institutions. To my mind, this approach is the only way forward in the field of information technology within the EU. This body could also create an information technology strategy for the EU institutions and monitor observance of this strategy.

The EU should also start to create common data and telecommunications-network architecture for the purposes of its national administrations. The structure of this architecture must be such that it only defines the standard interface for connecting the network and standard methods for communicating with other participants. Each participant should have its own internal methods but, when participants communicate, they should use agreed methods and the standard interface.

Standardization and architecture must be very dynamic and flexible due to the fact that current information technology is susceptible to very rapid change. New services and technologies are continually being placed on the market. The whole field of information technology still has to undergo a great deal of change and if the architecture in place is inflexible, this will lead to problems very rapidly because systems cannot be changed easily to meet new needs.

The internal data processing and communication of Member States is the concern of each of these individual Member States, each being free to do as it sees fit. I do not see that there is any possibility for the EU to exert its influence in this area. It is also unnecessary as, if there is a common data-communication architecture between Member States and the EU institutions, participants can have their own individual system and they will only have to follow common rules when they communicate with each other.

11 Future prospects

I am not very optimistic with respect to the EU's chances of creating an efficient system for an electronic communication network for administrative purposes. This system would be constructed using the 'spaghetti method' in that, for each purpose, the EU will construct its own communication network. In practice, this means that there will be some hundred or so independent networks which are all actually doing the same thing. This is very expensive, leads to a great deal of extra work and is also impossible to manage.

One day someone will put the question: why not use Internet as a communication network? It is cheap and available. Suddenly Internet will have become the EU network. However, in my opinion, Internet is not the right choice for an EU network because of its limitations. I would prefer to see the EU create a common network architecture, its own internal 'Internet', for all kinds of purposes. Such a network can in fact be constructed in the same way as Internet but it would only be for EU purposes. The table in Appendix 2 compares the 'spaghetti method' for constructing a network with the jointly-managed network. Appendix 3 gives an illustration of, firstly, the 'spaghetti method' and, secondly, a common architecture.

Standardization within the fields of information technology and data communication is a difficult issue because developments in both these fields are very rapid. In practice, the main role of standardization in these fields is now being dictated by market forces. These are the forces which will decide which direction is the right one and which standards are usable.

In a way, this is a good thing because it will lead to a situation in which the best networks, solutions and systems will conquer the market and in which others will disappear. It also means that, when the EU is designing the architecture for information technology and data communication, it must be very dynamic. The situation will not provide the EU with the opportunity to neglect the issues of information technology and a data-communication strategy; it will demand these things.

Within the framework of the ENS and the IDA programmes, an attempt was made to create a common network for the EU. However, at that time, it was not possible to do so and there was not enough political support. The target set was admirable and, to my mind, the EU should strive to achieve the same target today. It could be that the programmes undertaken at that time chose the wrong methods in that an attempt was made to achieve everything simultaneously within one single programme. It is my view that the only way to achieve this target is to continue to go forward step by step, and a good point of departure would be to create common information technology and data-communication architecture for the EU institutions.

APPENDIX 1. Table on some data-communication projects in the EU

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
ENS - European Nervous system	Build up communication system for Virtual European Administrative Service	DG XIII	-	-	-	An umbrella for various other projects under DG XIII
EBR - European Business Register	to create a European Company Register and to create a network between administrations holding official company information	DG XIII	EDI (EDIFACT) and VT100, 3270, minitel	X.25	-	Project falling under the ENS programme
EWTIS - European Water Traffic Information System	to create an information system for ships carrying dangerous cargo	DG XIII	EDIFACT, X.400, OSLAN, TCP/IP	X.25, X.21, Asynch. (tty), Ethernet	Oracle	Project falling under the ENS programme
INCA - Information Net and Card for Adapted Management of European Road Transport and Traffic	to construct an architecture for the interchange of transport information between administrations	DG XIII	EDIFACT, Proprietary E-mail service	X.25, X.28, SDLC, Asynch. (tty)	-	Project falling under the ENS programme. System is network independent
CAPE - Computer Aided Post in Europe	to create a pan-European information system for postal service organizations for the purposes of improving Community postal services	DG XIII	EDIFACT, X.400	X.25, Ethernet	Oracle	Project falling under the ENS programme.
CARE - CARE Telematics	to demonstrate how telecommunication can improve the efficiency and effectiveness of national administrations in the field of health care	(ENS/ DG XIII), DG V and IDA/ DG III	EDIFACT, X.400, OSI TP (0,2,4),TCP/IP, FTAM, FTP, RPC, Telnet, X/Open XCT,	X.25, X.29 Ethernet	Oracle	Project falling under the ENS - and IDA-programs.
TECN - Transplant Euro Computer Network	to construct a European-wide, open information system for organ-exchange organizations, registers and tissue banks	DG XIII	X.400	X.25, Ethernet, modems (via telephone network)	Oracle	Project falling under the ENS programme
SOSENET - Social Security Network	to create a network for the interchange of information on old-age pensions between social security organizations	DG XIII	EDIFACT, X.400	X.25, Ethernet, Token Ring	-	Project falling under the ENS programme

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
ENVIRONET - Environment Network	to establish a technical platform for the exchange of information between European environmental administrations	DG XIII	EDIFACT, TCP/IP, X.400, X.500, FTP, RPC	X.25, ISDN, SLIP, PPP, PSTN	-	Project falling under the ENS programme
NORT - Income Tax Management for Non Resident Taxpayers	to create an information-exchange system between tax authorities to avoid double taxation	DG XIII	EDIFACT, X.400	X.25	Oracle	Project falling under the ENS programme
RICE - Retrieval and Interchange of Standards in Europe	to speed up the standardization process and to render it more efficient, using telematic information exchange	DG XIII	X.400, FTAM, FTP, KERMIT,TELNET, VT100	X.25, modems, ISDN, PSTN	-	Project falling under the ENS programme
CADDIA - Cooperation in Automation of Data and Documentation for Imports/exports and Agriculture	Exchange of information between administration of European Customs Union, agricultural market organizations and statistical authorities	?	-	-	-	Started 1987
INSIS - Interinstitutional Integrated Services Information System	Exchange of information between member states and the Commission by user oriented services	?	-	-	-	Started 1983
TEDIS - Trade Electronic Data Interchange System	Coordinate electronic data interchange systems and promote standardisation of Electronic Data Interchange	?	-	-	-	Started 1988
COMEDI - Commerce Electronic Data Interchange	Exchange statistical data relating to the trading of goods between The EU and Member States authorities and companies in the business	DG III	-	-	-	Proposal for a Council decision COM(93) 73 final, 12 March 1993
EIP - European Interconnectivity Platform	.to create a European-wide enhanced communication service and a communication platform	DG XIII	EDIFACT, X.400	X.25, X.28, X.29, Asynch. tty	-	Project falling under the ENS programme

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
IDA - Interchange of Data Between Administrations programme.	Contribute to the implementation of trans-European telematic networks for the exchange of data between administrators.	DG III	-	-	-	Proposal for a Council Decision COM(93) 69 final, 12 March 1993 and the draft Council Decision of January 1995
QUOTA	to create the centralized management of the tariff quota system and connect the Member States electronically for this purpose	DG XXI and IDA/DG III	-	-	-	The pilot project for Surveillance data transfer should be completed by April 1995 Project falling under the IDA programme.
EIONET - Environmental Information and Observation Network	to create a data-communication network between the European Environment Agency and its clients	EEA, DG XI and IDA/DG III	-	-	-	Project falling under the IDA programme.
NSPP - The National Servers Pilot Project	to create a X.400-based store-and-forward network between Member States and some EU institutions	DG III	X.400, X.500	X.25	-	Version 5MS (5 Member States) were successful and in 1993 the decision was taken to expand the system to cover 12 Member States (version 12MS). The Pilot phase will end in September 1995, after which the system will be in use. Project falling under the IDA programme.
TESS/SOSENET - Telematics for Social Security SOcial SEcurity NETwork	to create an information-exchange system between all social-security institutions in the Member States	EC/DG V and IDA/DG III	-	-	-	Project falling under the IDA programme.
ANIMO - ANImal MOvements	to provide an electronic notification system between veterinary control posts	DG VI and IDA/DG III	-	-	-	System is in use. A plan to enhanced the system technically exists. Project falling under the IDA programme.
SHIFT - System to assist the HEalth Controls of Imports of items at Frontier inspection posts from Third countries	to exchange of information between veterinary-control authorities of the Member States	DG VI and IDA/DG III	-	-	-	System is in use. A plan to enhance the system technically exists. Project falling under the IDA programme.

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
SCENT/CIS	to create a system and network for combatting fraud within the areas of customs, agriculture and fiscal matters	DG XXI and IDA/DG III	-	-	-	SCENT and CIS are live systems. Project falling under the IDA programme.
Electronic messaging between administrations	to increase the use of E-mail, the goal being 'harmonized and fully interoperable E-mail services for all European institutions and Member State Administrations involved in the management of the Internal Market'	DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
IDA - Communication and management of official documents	to increase the efficiency of the decision-making process and, in particular, legislative and the budgetary procedures	Secretariat-General and IDA/DG III	-	-	-	This was also called earlier (in IDA-Online) C.D.M.P - Community Decision Making Process. Project falling under the IDA programme.
IDA - Horizontal activities - generic services	to develop common facilities and tools for networks which will function jointly and connect with one another using Common Communication Network/Common System Interface CCN/CSI	DG III	-	-	-	Project belongs to IDA-program., but this is not mentioned in the draft Council Decision.
IDA - Horizontal activities - architecture	to maintain and develop the technical specifications to ensure interoperability and expand NSPP to other areas and all Member States	DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
IDA - Horizontal activities - Legal and contractual aspects	to define and agree upon legal aspects and make participants and users aware of these aspects	DG III and DG XV	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
EMCDDA - European Monitoring Centre on Drugs and Drug Addition	to create a permanent structure for monitoring the use of drugs and for sharing information on the socio-cultural and epidemiological aspects of drugs	Secretariat-General and IDA/DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
European Medicine Evaluation Agency network	to create a data-communication network between the European Medicines Evaluation Agency and its clients	EMEA and DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
RESMA - Reseau des Marques	to create a data-communication network within the Internal Market between the Office for Harmonization and its clients	Office for the Harmonization in the Internal Market and IDA/DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
Translation centre for the bodies of the union	to enable the rapid and reliable interchange of electronic documents between the translation centre and its clients	SdT and IDA/DG III	-	-	-	Project falling under the IDA programme, but this is not mentioned in the draft Council Decision.
VIES - Vat Information Exchange System	to exchange Vat information	DG XXI and IDA/DG III	-	-	-	Project falling under the IDA programme.
Excise control	to convert the current SEED database into an on-line distributed database and convert the fax-based movement verification system into an on-line messaging system	DG XXI and IDA/DG III	-	-	-	Project falling under the IDA programme.
TARIC - Tarif Intégré Communautaire	to create the centralized collection of regulations/measures related to Community imports and exports and the electronic exchange of information between participants	DG XXI and IDA/DG III	-	-	-	Project falling under the IDA programme.

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
EBTI - European Binding Tariff Information	to develop a data-transmission system concerning binding tariff information	DG XXI and IDA/DG III	-	-	-	Project falling under the IDA programme.
TRANSIT - Transit control system	to automatize the customs clearance procedure for goods circulating within the EU and EFTA countries	DG XXI and IDA/DG III	-	-	-	Project falling under the IDA programme.
FIDES - Fisheries Data Entry System	to create an information-exchange system between DG XIV and fisheries administrations within the Member States	DG XIV and IDA/DG III	-	-	-	Project falling under the IDA programme.
PHYSAN - Phytosanitary controls	to improve the efficiency of information exchange within the field of plant health between the Member States and the Commission	DG VI and IDA/DG III	-	-	-	Project falling under the IDA programme.
The EURES - European Employment Services	to create an information system and network between the Community and the national Public Employment Services	DG V and IDA/DG III	-	-	-	Project falling under the IDA programme.
SIMAP - Système d'Information sur les Marchés Publics	to increase the efficiency in handling of public tenders	DG XV and IDA/DG III	-	-	-	Project falling under the IDA programme.
REITOX - Réseau Européen d'Informations sur les Toxicomanies	to create a data-communication network between the Commission, national authorities dealing with drugs and the European Monitoring Centre on Drugs and Drugs Addition	Secretariat-General and IDA/DG III	-	-	-	Project falling under the IDA programme.
DSIS - Distributed Statistical Information Services	to coordinate the development of the European statistical services	Eurostat and IDA/DG III	-	-	-	Project falling under the IDA programme.

Project name	Aim	Responsible body	High-level protocol	Low-level protocol	Database	Comments
EXTRACOM	To develop foreign-trade statistics	Eurostat and IDA/DG III	-	-	-	EXTRACOM falls under DSIS. Project falling under the IDA programme.
SERT - Statistiques d'Enterprises et Réseaux Télématiques	To provide automated techniques for statistical data collection and dissemination	Eurostat and IDA/DG III	-	-	-	SERT falls under DSIS. Project falling under the IDA programme.
SIGL - Système Intégré de Gestion de Licences	To manage licences for imports of restricted products from third countries	DG I and IDA/DG III	-	-	-	Project falling under the IDA programme.
Fourcom and Comsteel	to provide an information-exchange system between the Commission services and the national competition administrations	DG IV and IDA/DG III	-	-	-	Project falling under the IDA programme.
ITCG - Illegal traffic of cultural goods	To prevent the ilegal traffic of cultural goods	DG X and IDA/DG III	-	-	-	Project falling under the IDA programme.

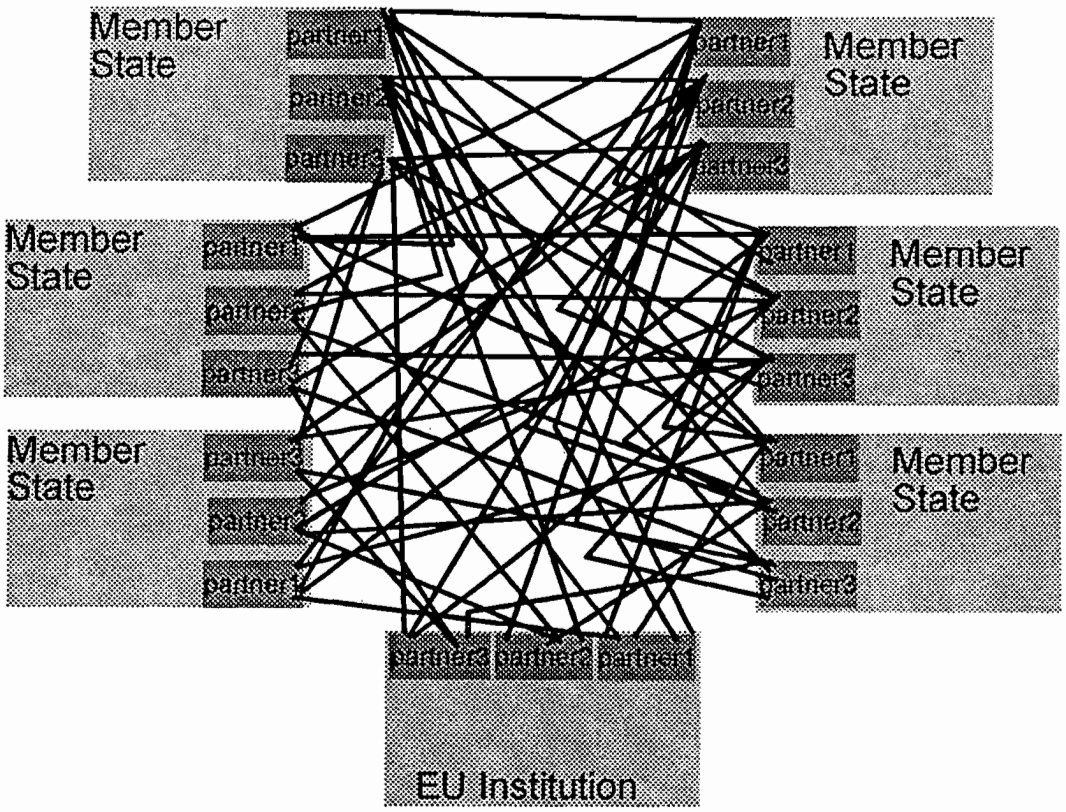
APPENDIX 2

Table comparing the common data architecture to non architecture (the 'spaghetti method') from the point of view of various aspects

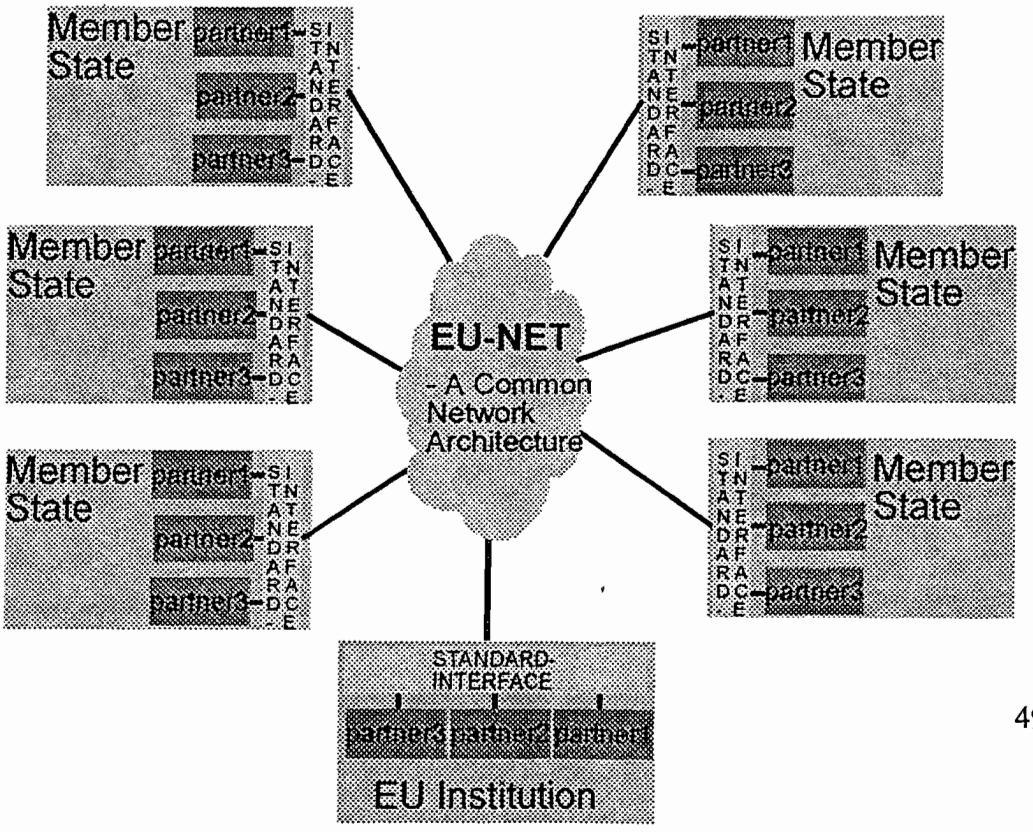
ITEM	No Common Network Architecture	Common Network Architecture
Development	Every project must design its own network.	Projects can use the available network architecture.
Redesign	Everything must be renewed.	Only that part which needs redesign has to be renewed.
Limitations for new systems	No limitations	No limitations, but systems must be created in accordance with the architecture.
Communication network	Each system creates its own network.	All systems can use the same network.
Costs	Cheap if there is only one system, but very expensive with many systems.	Cheap with many systems, but expensive with the first system.
Management	Not manageable with many systems (see Appendix 3).	Manageable, amount of systems does not effect management very much.
Security	Poor, because each system must create its own security mechanism and it is too expensive.	Good, security can be at the required level, it is manageable and costs are reasonable.
Supplier dependency	Each system is dependent on the supplier of that system.	Supplier independent.
Useability	If the line is broken, only one system is effected.	System can be designed so that there is always a spare line, then line breakdown does not effect any of the systems.

Appendix 3
Theoretical illustration of six Member States and one EU institution which all have three partner to communicate with each other. All partners 1 communicate only with other partners 1 and partners 2 only with other partners 2 and so o

Situation without a common network architecture

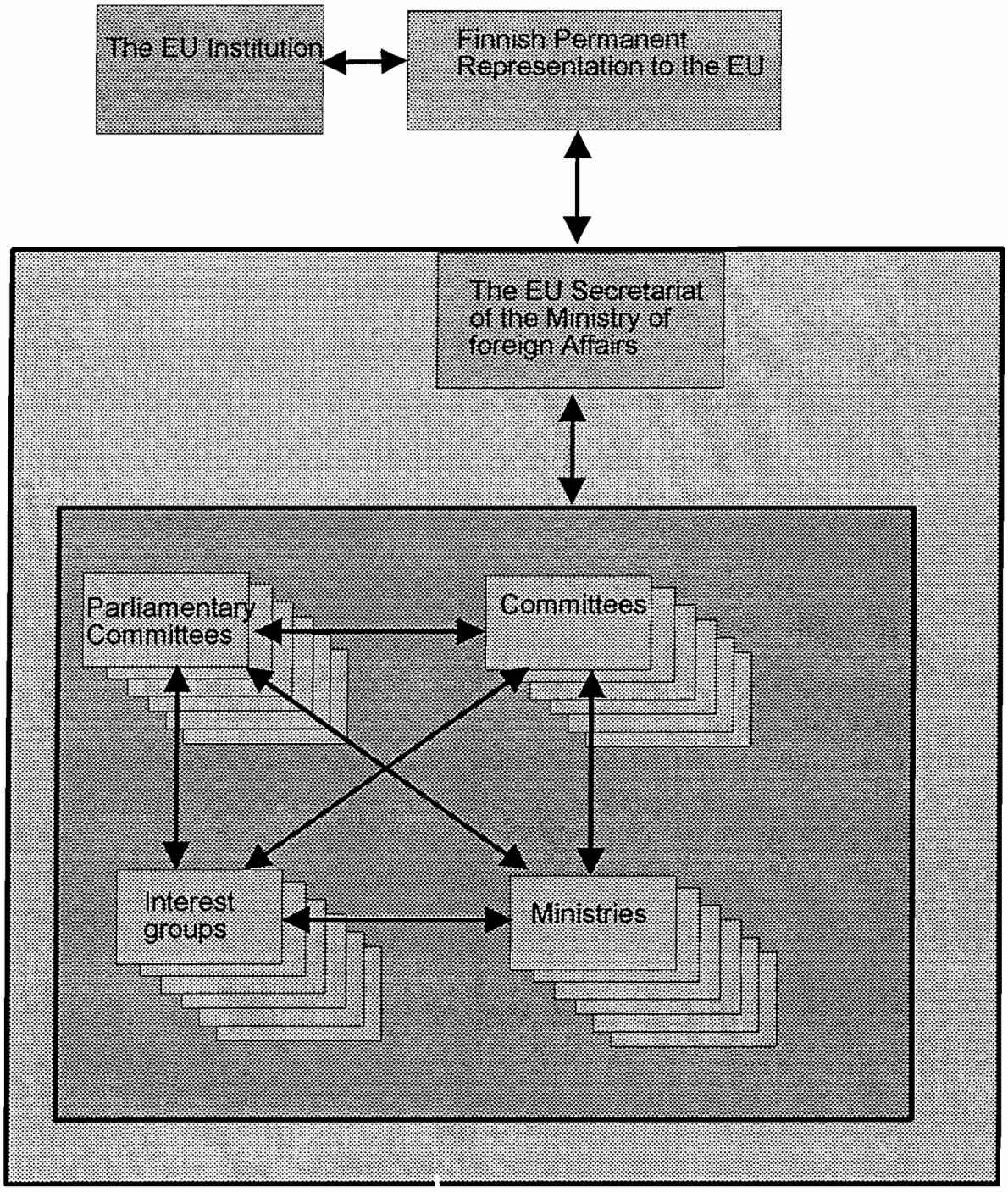


Situation with a common network architecture

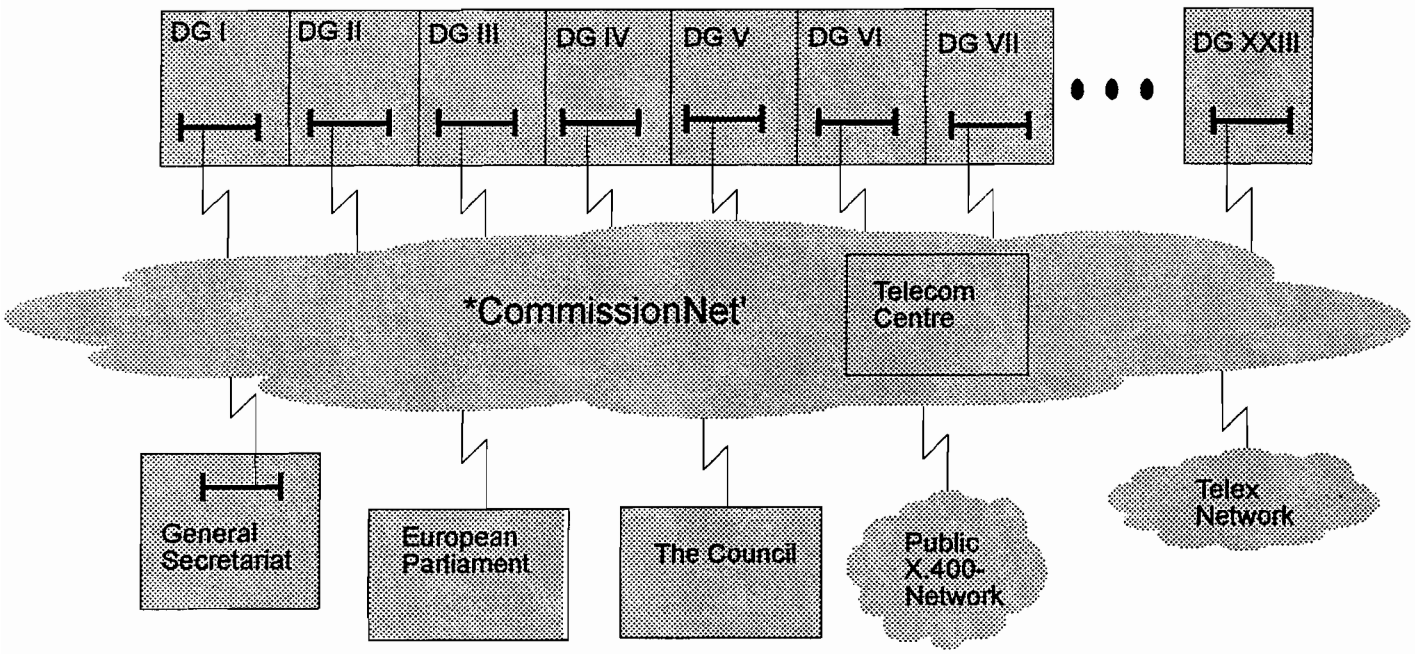


Appendix 4

The circulation of the documentation between the Institutions of the EU and the authorities of Finland and the circulation of documentationbetween the authorities and interest groups in Finland.



APPENDIX 5 The 'CommissionNet*



1. Based on an article in *Helsingin Sanomat* of 23 June 1995.

2. Information on this was obtained from François Kodeck during a meeting held on 19 July 1995 at Brussels, Avenue D'Auderghem 45, between François Kodeck, Michael Kelly and Kari T. Sipilä.

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